

LOW LEVEL RADIOACTIVE WASTE: AN ENVIRONMENTALIST'S RESPONSE*

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WE ARE living in a time of environmental crisis. Assaulting the seas, the air we breathe, the forests, our water. Nature reels under the onslaughts of a multitude of industries, agricultural exploitation, and the after-effects of unbridled consumerism. We have generated hazardous waste for which we struggle to find a home. An informed and responsible public must understand the impact on human health and nature that we are beginning to experience. Our technologies concerning hazardous waste are new and should avoid the assurances to the public that there is no danger to the biosphere. With an attitude that all is perfectly safe the public is, or was, effectively silenced; the complaints of environmentalists are neutralized by armies of experts, both governmental and industrial. What are the risks to the environment, as compared to the quick return profit? At this juncture we are aware that we must make choices about what risks we are willing to take. Is nuclear power necessary? Already we have faced years of mismanagement. Low level waste generated within the last thirty years is one of the complex problems the public and future generations must address. It is my subject today to present how society reacts to this legacy, to informational aspects of the waste management industry, to the arena of health effects, to the nuclear age.

Perception of the problems concerning waste disposal are compounded by the nuclear industry itself. People do not separate the nuclear industry and the military in their perceptions. The Plowshare program, to develop the peaceful atom, promised a technology that would be as safe as walking, healthy and clean as spring water. The public has been lied to, given confusing information about potential health effects and about the longevity of isotopes. We were told that the potential hazards to the environment were temporary, that

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our future generations would be saved by the harmless, cheap gift of nuclear power. Assurances were, and are, given as to the safe thresholds of exposure, not taking into account the complexity of the problem or variables involved in determining what is safe to whom. Controversy over biological health effects resulting from exposure is the rule. Record keeping for workers has been inadequate in the past: incomplete, counting only certain isotopes, and neglecting that doses are cumulative. We are told of risks and benefits. But is the benefit to this generation? The next generation pays whether you are talking about reactor waste or even medical waste. Risk and benefit do not often coincide.

The population is generally wary of things nuclear. Why? The information relating to the safety of nuclear power was in the hands of scientists in the past and specialists, not the public. Those who were recipients of serious health effects resulting from exposure were unable to prove liability. If a radiation injured worker, for instance, attempts to prove that his serious health effects resulted from exposures to radiation in the facility where he worked, he will have difficulty proving liability, receiving restitution from the owners, or the government. He may be condescended to and end up penniless. His allowed dose was higher as he was "voluntary," willing to take the risk. But how many knew the health risk when they volunteered? I refer you to the article by Karl Morgan here.¹ We would be shocked if we realized how few receive medical help or legal aid. Our judicial system is not geared to complex and controversial technical issues. Medical experts willing to testify in court are made to feel foolish when faced with a cadre of legal experts who do this kind of thing every day.

The public is aware that if there were health hazards in their area as a result of leaks, plumes, inhalations, catastrophic events, that the onus has been put on to them to prove it. We must stop using this outdated paradigm. If the public is informed properly, the onus will be put back onto the shoulders of the polluter to prove his innocence. Involvement of citizen groups into the decision making part of waste management is essential.

Schisms are developing between the nuclear industry and the public. The public believes that the information regarding health effects and political policy is biased. When they are asked to comment, they must decipher statistical studies in complex technical jargon. They encounter a world of numbers, graphs, models, variables. And, indeed, one cannot but sense a certain heartlessness at the center of the statistics. We cannot count "mild mutations" or incompetence² of the immune system in our epidemiology

because of its subtlety. The ten leukemia deaths we might naturally “expect” are not numbers, they are people. The public must be given information in comprehensible language if their comment is expected.

Oftentimes in the past an area was chosen for a waste site with but the knowledge of a few local officials. To many, the result of having a waste site in their backyard would be perceived as disaster waiting to happen. The distrust may unfortunately so color a careful, well thought out waste management plan that even they will be unable to do the necessary cleanup, stalling efforts that are essential now. Increasingly, as industry is forced to rethink its relationship to profit versus the environment, it will find demands from the public more insistent.

The NIMBY syndrome has arisen from the population who felt betrayed, starved of information, ineffectual in the decision-making process that affects their own demographic and social arenas. Increased communication between waste facility operators, technicians, scientists and their hosts, those who reside in the area, is the only way we can hope to face the responsibilities of storing our radioactive waste with any measure of safety.

If this is not done, the NIMBY syndrome could paralyze the best thought out recommendations. The waste must go somewhere, but we must talk, share knowledge and stop serving the needs of industry and the military alone. Otherwise our discussions will be futile. If we demand our level of life style, then we must expect increasingly disastrous effects on the environment. Sacrifices will have to be made on all fronts. We must remember if the public lags behind in technical understanding, so confusing risk, there can be overreaction or little comprehension of how serious a risk there is.

The main reason the public has become involved in the issues of low level waste management is because they feel that there may be health effects which may threaten the community near the facility and future generations through genetic mutations. This perception has grown through the work of certain experts who were, in some cases, able to change public health policy eventually: the work of Dr. Alice Stewart of England, whose epidemiological finding uncovered the risk of fetal x-rays.³ The findings of the Oxford Survey answered why leukemia and cancer deaths in children were rising. Dr. Stewart concluded that one fetal x-ray could almost double the chance of a child developing cancer or leukemia. (Though she started with a statistically small group she expanded later to cover both x-rayed and non-x-rayed children). The Oxford study is ongoing, forming one of the world's finest epidemiological data bases. As a result of her work, medical practitioners eventually stopped the use of fetal x-rays.

Her work was first published in the United States in 1956. Yet in the early 1960s the Atomic Energy Commission and the Atomic Casualty Commission issued their research indicating no significant hazard from low level radiation. On the assumption that such exposures were safe, our radiation protection standards were put into force. Yet there was the knowledge that there would be casualties: cancer, leukemia and damage to the gene pool. There would be victims, but it was believed that the benefits outweighed injury to those inevitable few. People did not know of this built-in liability. If they had, would they have allowed this leviathan industry to grow and flourish unmonitored?

As Alice Stewart went on with her research, the idea of the “standard man” as a norm to assess admissible dose to the population began to be questioned. The young, the infirm, the elderly could be considered more susceptible to the effects of ionizing radiation. How could one standard apply to all? As more was learned of health effects resulting in cancer and leukemia in workers, standards for radiation doses were lowered. Public perception changed again. Through the combined research of many—John Gofman, Alice Stewart, Karl Morgan, Rosalie Bertell, and many others—our perception of health effects has radically changed and has challenged the assurance of the pronuclear lobby. Susceptibility to radiation is an individual matter, and though we cannot look at each individual’s radiosensitivity, we make sure that this information reaches the public understanding that many of their environmental incompatibilities (allergies), asthmas, cancers, miscarriages, birth defects, recurring infectious disease, leukemias, may be exacerbated by radiation.

Radon poses a tremendous potential health danger; it is more easily available to do its work as we superinsulate our houses and seal off our basements. There is a lot of it around the old uranium mines also. Early uranium miners were not given health protection, told of the possible catastrophic health effects, or given any information that could have helped them. During Carter’s administration the Environmental Protection Administration proposed radon air pollution standards to protect (and inform, therefore) the public. These standards were downgraded to “action” levels under the Reagan administration and despite reports from the National Academy of Sciences on the adverse health effects from radon exposure, the radon program was neutralized, reduced, and the public suffered again from non-information. The EPA in 1986 began to study radon again in depth. What we must avoid is the conclusion that because radon’s risk is so large a contribution to our background radiation, we can generalize doses over the population because

not all populations are equally exposed. We cannot underestimate the contributions from such manmade sources as reactors, processing plants, atmospheric weapons tests, and radioactive waste. In fact, rather than minimize the importance of how we dispose of our radioactive waste, radon should maximize our efforts to do it safely.

I would like to say one other thing. That is that a very, very good book was published in 1987 called "Recommendations for State Assistance to Localities." Within that book, if anyone can get hold of it, you will see a lot of the things I talked about and a very, very sensitive appreciation of what public perception is and what we can do to address it.⁴

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